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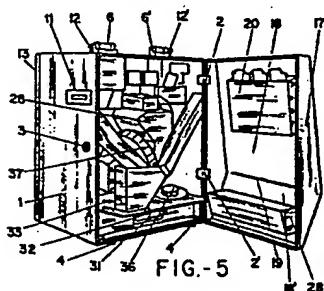
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(64) Improvements introduced in slot machines.

(67) A slot machine having an enclosing casing with a screen with luminous signs operable according to an electronic system, the operation of the signs being determined by chance to determine prizes paid out by the machine, the casing having gates 17, 13 at front and rear and lockable in closed positions, the general circuit of the machine having an input portion secured to the frame of the machine, a further part fixed to the interior of the rear gate 13 and a further part controlling the luminous signs and control and signalling elements fixed to the front gate 17.



IMPROVEMENTS INTRODUCED IN SLOT MACHINES

The present invention refers to improvements introduced in slot machines.

More specifically, the present invention refers to those machines which are normally installed in pubs, cafes, recreational centres, sports salons and similar establishments, which operate by the insertion of coins, or possibly tokens, having a predetermined value and which, in each operating cycle, following the dictates of chance, pay off prizes consisting in multiples of the value of the mentioned coins, or - in determined cases - in vouchers which can be exchanged for such prizes or by determined services rendered by the establishment itself in which the machine is installed, such as, for example, consumptions having a pre-established value.

Even more specifically, the improvements constituting the object of the present invention refer to those machines, known per se and divulged, which comprise a completely closed casing having at the front and at a height suitable to be conveniently observed, a screen comprising a reduced number of luminous digits, or possibly any other conventional signs or symbols which, when the assembly is operated for a pre-established period of time through an electronic system based on the use of digital techniques and by integrated circuits, are continuously and independently varied at a rapid speed to offer, by pure chance, when the detention is produced, a determined combination of signs from which the prizes paid off by the machine depend. Although this type of machine can be adapted with relative ease to the realization of different games, prior art machines comprise a slot for the insertion of

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coins, a push button which permits the initiation of each operating cycle to be determined, once the coin has been inserted and once same has duly been accepted by the corresponding selector device, and a battery of three push buttons, by means of each one of which the detention on each screen unit of a number or symbol can be determined. The prize is obtained when pre-established combinations appear on said screen units, which combinations are valued differently, in accordance with a table, and which basically consists in the repetition of the same sign on all of them, or at least on two of them. On the other hand, the assembly is provided with a system which permits, in a determined game, the signs which are of interest to be retained in order to increase the possibilities of success in the following game.

The improvements object of the invention, as will be analyzed and set forth throughout this specification, refer and are mainly directed to reduce the general size of the machine, to facilitate and simplify the operations of assembly during manufacture as well as the operations of revision and repair to which the assembly should be subjected, to facilitate the adaptation to different operating schemes and, in short, to increase as much as possible the strength, the safety and the automatic functioning thereof.

The essential and main characteristics and advantages of the improvements in question will readily be understood from the accompanying drawings, in which schematically and, naturally not limiting, there is represent-

ed a specific mode of embodiment thereof.

In the drawings:

Figure 1 is a front view of the slot machine constructed in accordance with the invention.

Figure 2 is an upper plan view of the machine represented in figure 1, with the two access gates to the interior situated in an intermediate open position.

Figure 3 is a side elevational view of the machine represented in the preceding figure.

Figure 4 is a posterior elevational view of the same machine, with the posterior gate completely open.

Figure 5 is a front perspective view, on a slightly enlarged scale, of the same machine represented in the four preceding figures, with the posterior gate situated in an intermediate open position.

Figure 6 and figure 7 are front and upper views, respectively, of the main element through which the coins are inserted in the machine.

Figure 8 is a section taken along line VIII-VIII of figure 6.

Figure 9 is a general scheme of the electric and electronic circuit which feeds the different mechanisms and elements forming the machine.

Figure 10 is a detail illustrating the scheme of one of the output amplifiers which form part of the general scheme represented in the preceding figure.

Figure 11 is a partial broken view, in perspective, of one of the displays which produce the rapid succession of numbers, signs or luminous signals.

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And finally figure 12 is a longitudinal section of the same assembly represented in the preceding figure conveniently assembled.

Thus, referring to these drawings:

Although the improvements of the present invention are applicable to the construction of large-sized slot machines to be directly installed on the floor, they can, more preferably, be applicable to the construction of machines having relatively reduced dimensions to be installed on a table, a counter, or the like, or to be fixed to a wall or a similar vertical surface. Hence, in accordance with the improvements in question, there is provided a support or casing having a general parallelepiped shape, of sheet metal, referenced in its assembly as 1, preferably having certain dimensions which will in no way be more than 50 cm., for example, dimensions of about 44.5 cm in height, by 34 cm in width, by 38 cm in depth, which casing can possibly be provided with a set of flexible legs 4 or any other type of supporting or fixing elements.

According to a characteristic of the improvements, the mentioned casing 1 is open at its front and posterior faces, which are closed by gates hinged thereto through the corresponding suitable vertical axes, defined by corresponding sets of hinges 2-2', of any suitable type, preferably calculated so that they permit the complete dropping of the mentioned gates until they are situated in planes parallel or almost parallel to the corresponding bases, in order to facilitate handling of the mechanisms and the inner elements of the machine. Both gates are secured in the closed position by means of safety locks

5 which can be of the type and model considered opportune, the assembly once closed forming a highly resistant and, naturally, completely tamperproof block isolated from the outside.

On the surface or the upper base of the mentioned casing there are located the slots for the insertion of the coins by means of which the machine will be operated. In accordance with the invention, these slots 5 are arranged in two molded bodies 6-6', identical to each other, conveniently secured to the mentioned base, for example, by means of screws which thread in corresponding holes 7, wherefore they are completely inaccessible from the outside. Each one of these elements adopt a stepped configuration, presenting an approximately L-shaped section which defines a protruding vertical surface 8, aligned with the slot in the same vertical plane or slightly inclined, so as to facilitate the insertion of the coins. According to another characteristic of the invention, the mentioned coin receiving bodies 6-6' will be capable of receiving coins having two different values, for example, 5- and 25-peseta coins, respectively, this latter body serving only to proportion the players with small change, in the normal case in which the machine is programmed to operate with coins having the first mentioned value. These two receiving elements are coupled to corresponding devices for controlling the size, weight and alloy of the coins 9-9', coupled to small grooves 10-10' into which the faulty or false coins are dropped and which can be collected through the corresponding side openings 11-11'. According to an additional but particularly advantageous characteristic of the invention, the

control devices of the coins 9-9' are fixed to the casing in a readily dismountable manner, for example, fitted into corresponding fixed guides and locked by means of bolts or latches 12-12' which can be actuated from the outside. Thus, in the preferred mode of embodiment to which reference has already been made, it will be sufficient to render inoperative the body 6' which receives the 25-peseta coin and to dismount the two coin devices 9-9', removing the former and mounting in its stead the latter, for the assembly of the machine to be ready to operate with 25-peseta coins, without returning small change of the coins having a higher value. These operations of adaptation could be carried out with all ease and swiftness by merely opening the front gate which will subsequently be described in detail.

The gate 14 with which the posterior or base opening of the casing is closed is mainly flat, in order to permit the possible installation of the machine against a wall or a similar vertical surface, and has only one continuous perimetral edge or flange 13 which fits into a corresponding step 15 provided at the edge of the mentioned base of the casing, forming a sufficiently sealed closure to prevent the penetration of dust or other impurities and any type of foreign elements with which the fraudulent handling could be attempted. This gate, in accordance with the invention, serves as a support for the plate of the control circuit which will subsequently be described in detail. Thus, it is sufficient to open this gate completely, placing it in the position indicated in figure 4 of

the accompanying drawings to have a comfortable and easy access to this circuit, so that any necessary repair or verification can be carried out. Preferably, this posterior gate will, furthermore, have a countersunk zone, not represented in the drawings, in which there will be situated the plug connection element through which the machine will be coupled to the network supply, a general switch and a general safety fuse.

The gate 17, by means of which the front face or base of the casing 1 is closed, adopts a slightly bulged shape, preferably forming two inclined planes 18-18' joined by a rounded horizontal edge 19. According to a characteristic of the invention, to the inside of this gate there is fixed, so that it can be reached once opening has taken place, the plate 20 which supports the circuit of the luminous displays, to which reference will be made subsequently, which images are visible from the outside through the screen units 21-21'-21" which, in conjunction, form the playing screen 22. This gate is also provided with openings through which there project to the outside, ready to be actuated, the control elements of the push button 23, by means of which the machine is operated, once the corresponding coin has been inserted in the slot 5 and has been duly accepted, and with the battery of push buttons 24-24'-24", by means of which the dual function of interrupting, when desired, the rapid succession of signs or symbols on the corresponding screen unit and of retaining the symbol obtained in a determined game, for the following game, in the conditions which will subsequently be studied, is achieved. This gate is also provided

with one or more plates 25, on which there are reflected and represented the distinct combinations of prize awarding signs, together with the amounts thereof, forming a sort of table, as well as one or more plates 26 which contain the indications for use of the machine and a luminous screen 27 with the pertinent indication which will be illuminated notifying the public when the machine is out-of-order for example, because of breakdown, because the supply of coins for paying off the prizes has been worn out, or for any other reason. Finally, at the lower part of the machine there is a large sized groove 28 readily accesible from the outside in which the coins corresponding to the prizes obtained by the players in the successive games will be dropped, being in a position to be picked up.

At the part corresponding to the casing itself, besides the coin receiving elements to which reference has already been made, there is situated, in the lower zone, a case 29 capable of sliding horizontally on guides 30-30', so that it is in a position to be partially extracted, for example, towards the front part, before the gate 17 is opened, by merely pulling a handle 31 of any suitable type. This case serves to store the coins which constitute the takings corresponding to the operation of the machine, and is secured in the closed position by means of a safety lock 32, wherefore to have access to the contents it is necessary to have at least two keys corresponding, respectively, to this latter lock and to the lock of the front gate.

According to an important characteristic of

the improvements in question, the guides 30-30' are in a position to slide, in turn, on a system of guides fixed to the casing 1, forming part of a frame 33 which could preferably be partially or completely withdrawn from the casing by horizontal sliding both through the front and through the posterior part thereof, in order to facilitate any repair, control or maintenance operations which should be carried out. On this frame there is mounted, firstly, a transformer 35 with a primary prepared to operate at any normal voltage, i.e. normally at 125 or 220 V, and three independent secondaries of 9, 14 and 24 V, respectively, which proportion the operating voltages of the distinct elements. The outputs of the transformer are connected to the plate 34 which supports the input circuit, which has at least one disperser, for example, of black anodized aluminium, to dissipate the heat.

On this frame 33 there is likewise installed an amplifier 36 which emits different sounds during operation of the machine, specially emphasizing, by duly selected melodies, the obtention by the player of the different possible prizes, also emitting determined melodies when the machine is out-of-order for a pre-established period of time. Besides, this amplifier is used to emit alarm signals, for example, in the form of a siren, when the assembly is subjected to blows, pushes, inclinations or any type of fraudulent handling.

Finally, on the frame 33 there are also installed the elements which guide and control the passageway of the coins from the inlet slots towards the case 29 or towards the groove 28 accessible from the outside, in which the coins originating from the small change and prizes are

dropped. These elements are basically comprised of a coin registering and rejecting mechanism 37, of the rotary type, known per se, which conveniently controlled by the electronic control circuit, drives towards the groove 28 the amounts corresponding to the distinct prizes obtained by the player, as well as the small change corresponding to the coins having a value higher than the price of the game, which are inserted through the corresponding slot 5, i.e. through the slot provided in the body 6' which is directly connected to the case 29 through the chute 40 in which there are placed the sensing elements which detect the insertion of each coin, in order to return the small change and to register it. The coins corresponding to the price of each game (generally 5 pesetas, as mentioned) which are inserted in the slot of the body 6 are stored in a storage tank connected to the meter device, which it feeds, and when the full capacity of this tank is reached, the successive coins which are inserted through the mentioned slot, since this chute is full up to the level of discharge, drop into the chute 39 which drives them towards the case 29. The chute 38 is provided with a safety device which cooperates with the electronic coin metering systems of the machine and which can, for example, consist in a microtimer 41 or a similar element which operates under pressure, being activated by the weight itself of the coins, so that when the reserve coins are reduced to below a pre-established level, the machine will no longer operate and further games cannot be played, since the existing reserve does not permit the prizes which could possibly be obtain-

ed by the player to be paid off. Finally, referring to the guide, distribution and control of coins, the machine is equipped with three meters 42-42'-42" installed, for example, on a support plate 43 directly fixed to the frame, which register, respectively, the insertions of coins having a higher value (i.e. 25-peseta coins in the most common example of embodiment), the number of games played (and not the number of coins inserted, so that the calculation of the profits are not falsified by the insertion of coins which will then be rejected since more than one stored credit will exist), and the number of coins which leave the rotary meter-discharger as a result of a prize, without registering those which leave as small change of coins having a higher value, so as not to alter the calculation of the profits.

The general electric and electronic scheme of the different elements and mechanisms of the machine has been represented in figure 9 of the accompanying drawings, figure 10 illustrating with certain detail the scheme of one of the output amplifiers. This scheme, due to the complexity thereof, does not represent the circuit which is supported by the plate 16, i.e. the control circuit. However, apart from the previously mentioned elements, such as the battery of push buttons 24-24'-24" and the general operating push button 23, it only illustrates the microtimers 42-42'-42" activated by the two types of coins accepted by the machine, the microtimer 43" indicative of the lack of coins, the output amplifiers 44, 44', 44", 45 and 46 corresponding, respectively, to the detention, out-of-

order and to the playing, the safety coils of the coin devices 47-47', the coin discharge coils 48, and the coils 49-49'-49" of the previously mentioned meters. Finally, the references 50-50'-50" correspond to the decoders by means of which there are fed the displays 51-51'-51" integrated in the screen 22 which will subsequently be studied.

As represented in figures 11 and 12 of the accompanying drawings, the displays or devices for producing the rapid succession of luminous signs or symbols, adopt an already known structure, incorporating a certain number of sign bearing transparent plates 52 mounted parallelly on a frame. As the most important improvement, according to the present invention, this frame is comprised of a flat, rectangular shaped plate, of insulating material, 53, on which there rest and to which there are fixed by means of screws, two faced metal blocks 54-54' comprising a number of horizontal grooves 55, separated by the corresponding ribs 56, equal to the half plus one of the number of transparent plates 52 which should be mounted and so situated that each one of these plates fit into one of the slots of one of said blocks, and are merely supported at their front against a rib of the opposite block, whereby assembly is substantially facilitated. Also in accordance with the invention, each one of the mentioned metal blocks has a countersunk zone, opposite to the mentioned grooves, in which there fits and is fixed, by means of a mere screw 57, an insulating plate 58-58'. One of the faces of each one of these plates is provided with a printed circuit 59, while the opposite face has, emerging in an orthogonal di-

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rection, a certain number of lamps 60 (as many lamps as transparent plates of which the display is comprised) duly connected to said circuit. When assembly takes place, the lamps 60 are housed in corresponding orifices 51 provided in the corresponding metal block, being in conditions to illuminate the transparent plate which corresponds to its position, with the possible interposition of different coloured filters, duly folded and fitted at the edges of said plate. Due to this arrangement, each one of the mentioned transparent plates, at the time at which it should be visible on the screen, is illuminated at two opposite edges and not at a single one of these edges, as is normal. Thus, there are obtained much better conditions of visibility of the signs from the outside and, besides, especially due to a suitable distribution of the lamps on the assembly, there is obtained a practically complete uniformity in the intensity of illumination of the successive signs. Finally, the described assembly is closed with a cover 62, for example, a stamped metal sheet, which conveniently fits into the position of assembly and is fixed therein, for example, by means of screws, and which is provided with a large central window 63 through which the transparent plates bearing the signs are visible from the outside, when they are conveniently illuminated.

Generally, as is logical, and apart from those already specified, all those additions and modifications in detail which do not affect the essential conditions, can be introduced in the practical embodiment of the improvements. It should also be pointed out that

in certain cases and under determined conditions, some of the mentioned improvements can be applied separately, which possibility should also be considered as being included in the scope of protection.

C L A I M S

1. Improvements introduced in slot machines, specifically those slot machines comprising a completely closed casing which, at a front position and at a height suitable to be comfortably observed, is provided with a screen formed of a reduced number of luminous digits or other conventional luminous signs which, when the assembly is operated for a pre-established period of time through an electronic system based on the use of digital techniques and by means of integrated circuits, are continuously and independently varied at a rapid speed to offer, by chance, when detention is produced, a determined combination of signs, from which the prizes paid off by the machine depend, which improvements are characterised in that the mentioned casing is completely open at its front and posterior bases or surfaces, these bases having gates rotating on suitable vertical axes, which gates can be secured in a closed position by corresponding safety locks and are capable of being dropped to approximately the plane of the corresponding base, and the general circuit of the machine being divided into one part corresponding to the input circuit which is fixed to the frame itself, another part corresponding to a control circuit which is fixed to the inner face of the posterior gate, and a third part corresponding to a circuit of the luminous signs and the control and signalling elements which is fixed to the front gate.

2. Improvements according to claim 1, characterised in that the lower part of the casing has a hous-

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ing capable of sliding on horizontal guides, of being withdrawn through the front part and being secured in the closed position by means of a safety lock, in which there are stored the profits corresponding to the operation of the machine, which guides form part of a frame which is conveniently fixed in the assembly position and which, in turn, can slide on guides fixed to the frame, capable of being partially withdrawn therefrom through at least one of the two gates comprising same.

3. Improvements according to the preceding claim, characterised in that there is mounted on the slideable frame the assembly of the input circuit of the machine, the amplifier, the elements which guide the circulation of the coins towards the pick-up case and towards the groove, accessible from the outside, of paying off prizes and returning small change, through the storage reserve housing and the rotary coin registering and dispensing device.

4. Improvements according to the preceding claims, characterised in that the upper base of the casting is provided with two slot bearing protruding bodies for the insertion of the coins having two different values, connected to devices for controlling the weight, size and alloy of said coins, and with lateral slots for the rejection of false coins, one of which slots faces the chute - fixed to the frame - which drives the coins towards the profit storage housing, with the interposition of sensing elements which determine an operating cycle of the machine and the return of small change, while the

other slot - through which the coins having a value coinciding with the price of the game are inserted - faces a tubular reserve storage housing, likewise fixed to the frame, connected in turn to the rotary prize distribution and small change return mechanism, the coins being diverted, when this housing is completely full, through a corresponding chute, also fixed to the frame, towards the mentioned profit storage housing.

5. Improvements according to the preceding claims, characterised in that the tubular reserve storage housing is provided with a sensing element, activated by the weight of the stored coins, which when this weight is reduced to below a pre-established safety limit, prevents the machine from operating.

6. Improvements according to claim 4, characterised in that the coin selector devices are fixed in the assembly position in a readily dismountable manner, so that it is sufficient to render inoperative the slot for the insertion of the coin having a higher value and to replace the selector corresponding to this slot by that mounted in the other, so that the machine is ready to operate normally, accepting only coins having a higher value and using these coins to pay off the prizes which can be obtained by the players in successive games.

7. Improvements according to claim 1, characterised in that the front gate adopts a general slightly bulged shape, having two inclined, opposite and unlike planes, joined by a rounded horizontal edge, and the lower

plane has a large opening through which the delivery chute of claim 3 projects partially outwards, so as to facilitate the collection of the coins, while the upper plane is provided with the control elements protruding from the general operating push button of the game, the push buttons permitting each one of the displays or devices for producing the rapid succession of luminous signs to be activated, determining the detention, when desired, or the retention thereof with a view to the following game, of the screen units through which these signs are visible, a luminous screen which notifies that the machine is out-of-order, and the plates which contain, respectively, the instructions for using the machine and the prize identification and estimation tables.

8. Improvements according to claim 1, characterised in that the posterior gate is completely flat and parallel to the inner face thereof there is fixed the previously mentioned plate which supports the control circuit, this gate presenting a countersunk zone in which there are situated, being accessible from the outside, the elements through which the machine is connected to the network, the general operating switch and at least one general safety fuse.

9- Improvements according to claim 1, characterised in that the input circuit, fixed to the frame supported by the casing, is fed by the outputs of a transformer, likewise fixed to this frame, which comprises a primary prepared to operate at two different voltages - normally 125 or 220 V, and three independent secondaries,

which proportion the distinct voltages, normally of 9, 14 and 24 V, corresponding to the operating voltages of the different elements.

10. Improvements according to claims 1 and 7, characterised in that each one of the device for producing the rapid succession of luminous signs comprises an insulating plate to which there are fixed, in faced positions, two metal bodies whose faced surfaces are provided with a succession of grooves parallel to the base, so situated that when assembly takes place each one of the sign bearing transparent plates fits, at one of its edges, into one of the grooves of one of the blocks, while the opposite edge simply rests on the rib which separates two successive grooves of the other block, to the opposite faces of these blocks there are fixed insulating plates which on their outer surfaces, incorporate a printed circuit and from whose inner surfaces there protrude orthogonally lamps housed in corresponding holes provided in the blocks, to illuminate the mentioned transparent plates, so that each one of these plates is simultaneously illuminated, when operating, at two of its opposite edges, obtaining by means of a suitable distribution of the mentioned lamps in the assembly, practically uniform illumination conditions of all the plates and a maximum regularity and optimum illuminating conditions of the signs and visibility thereof from the outside.

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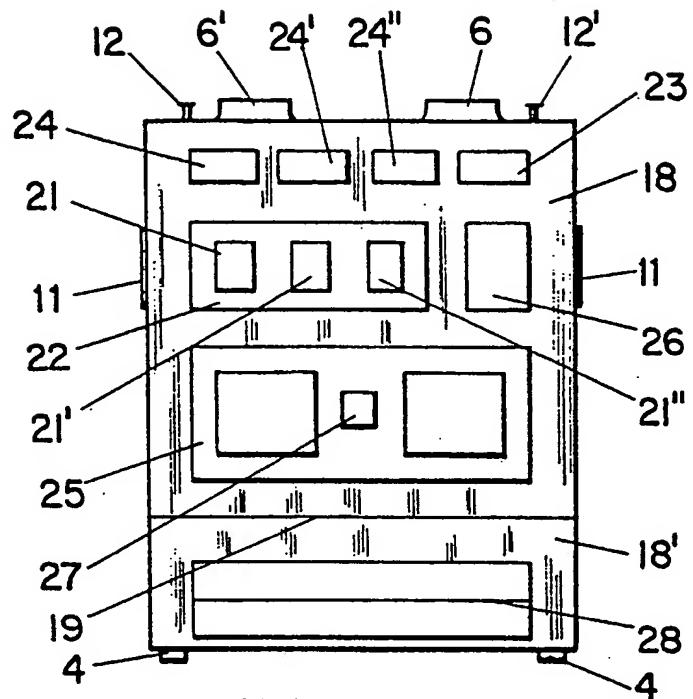


FIG. - 1

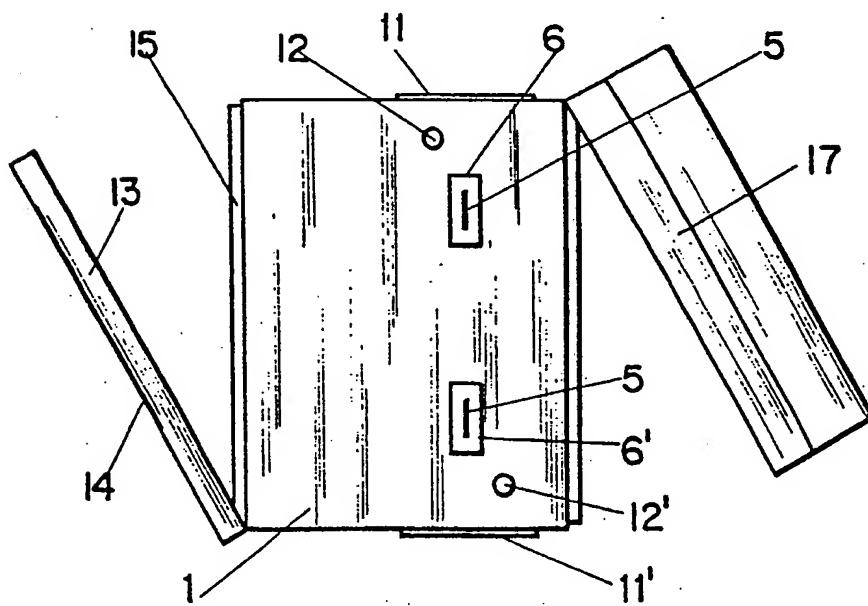


FIG. - 2

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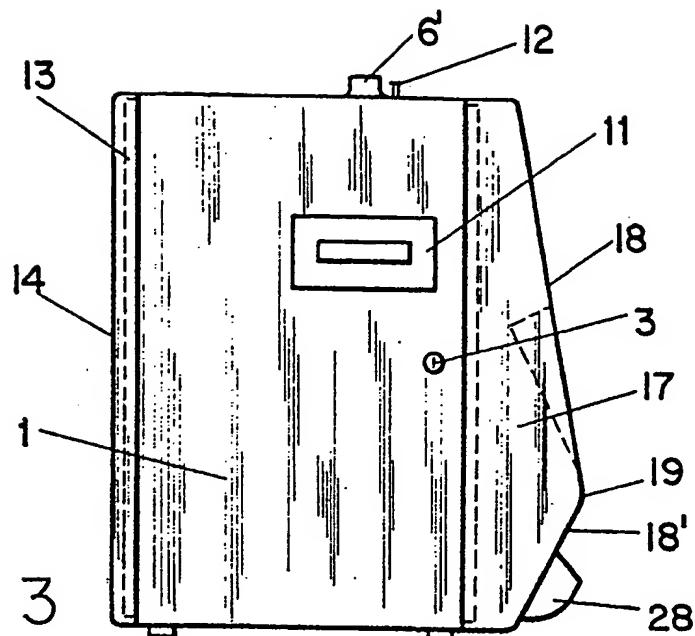


FIG. - 3

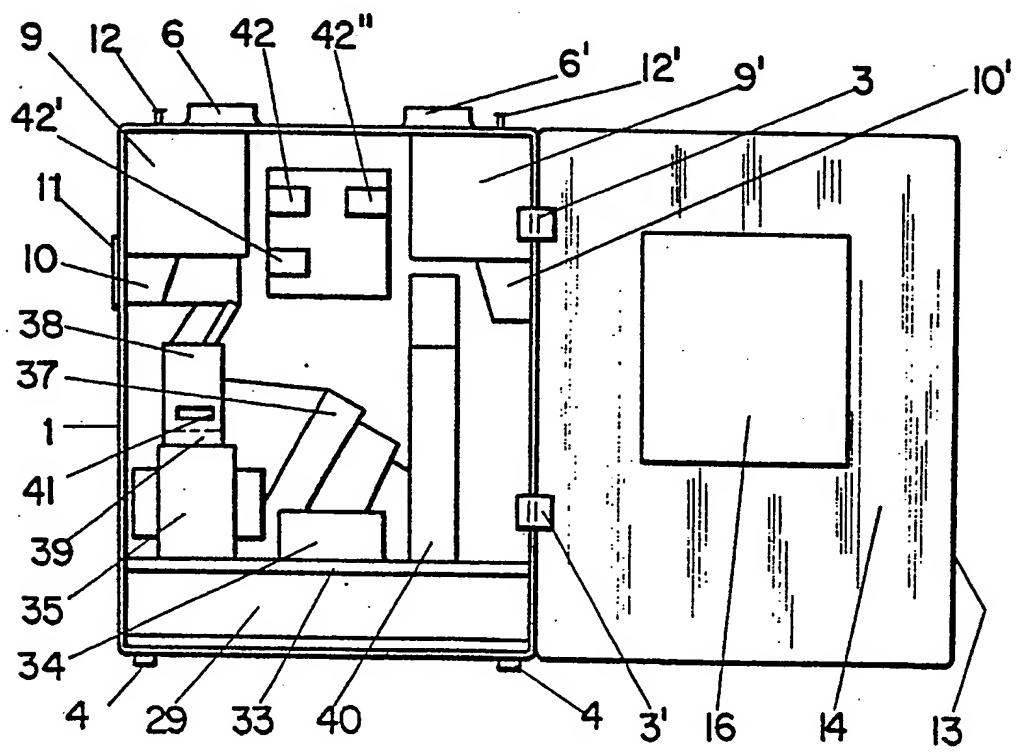
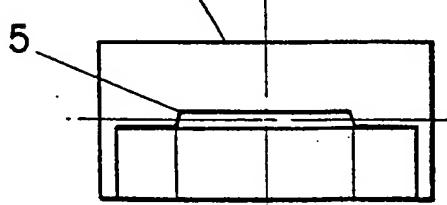
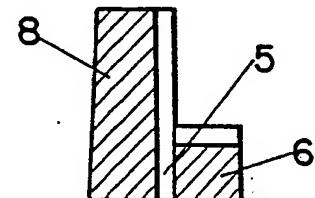
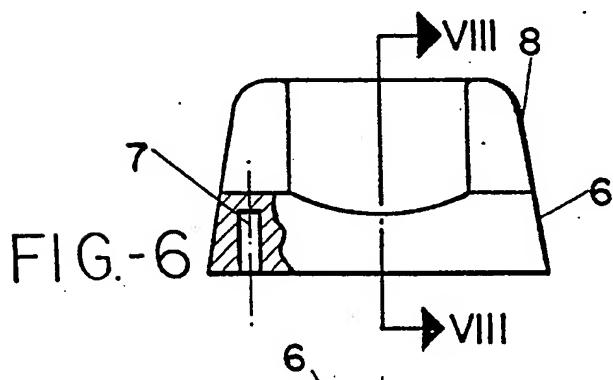
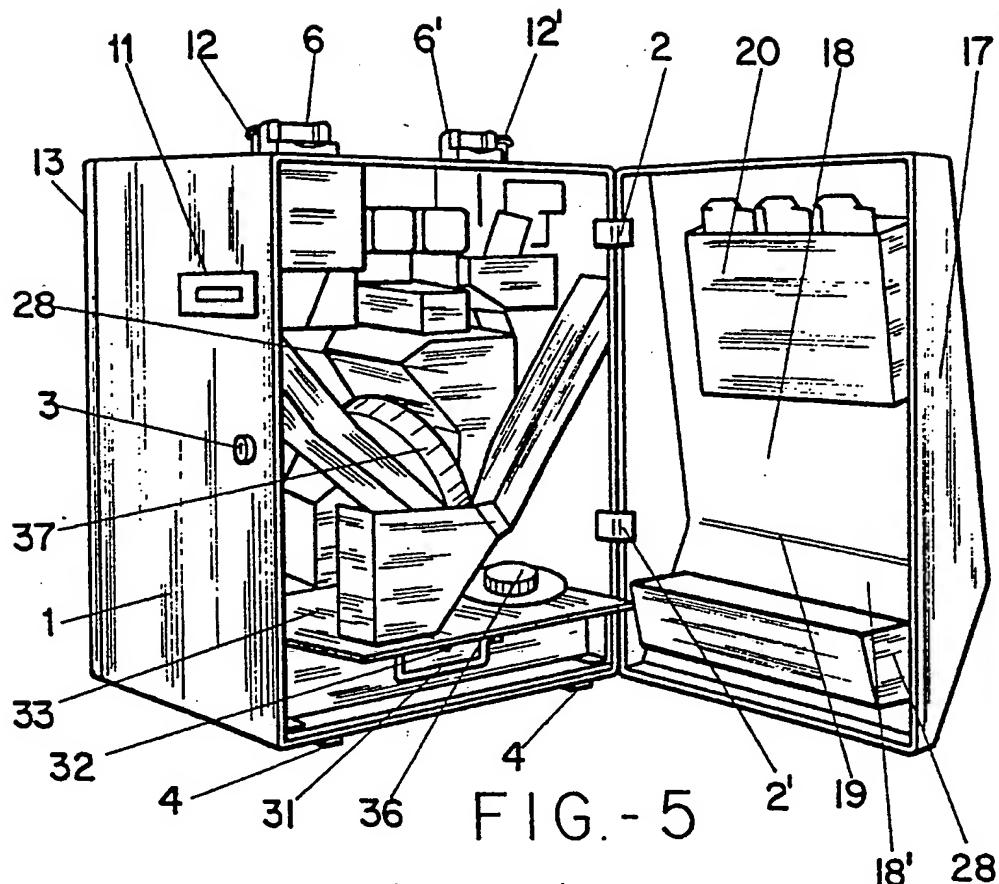


FIG. - 4

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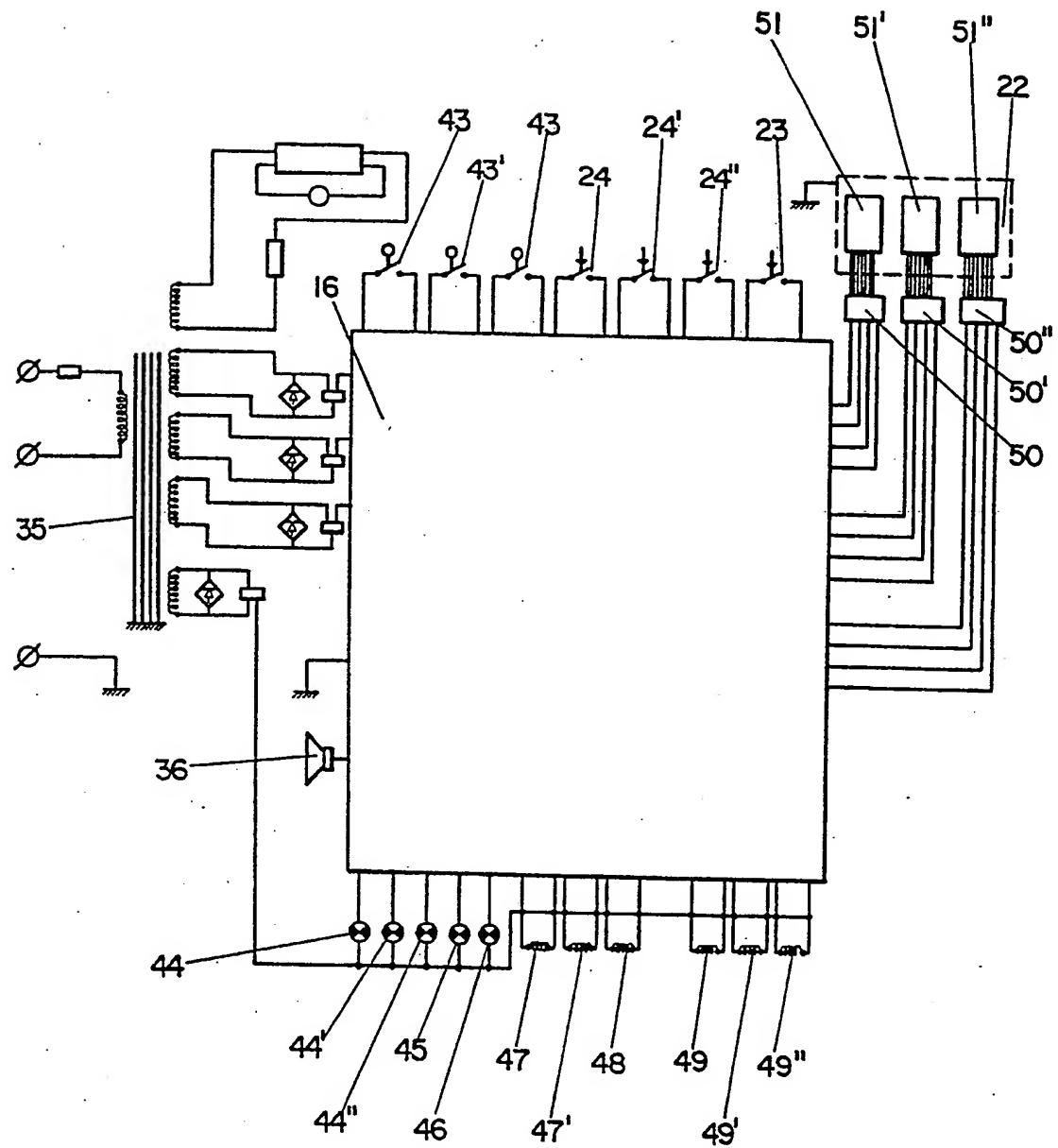


FIG.- 9

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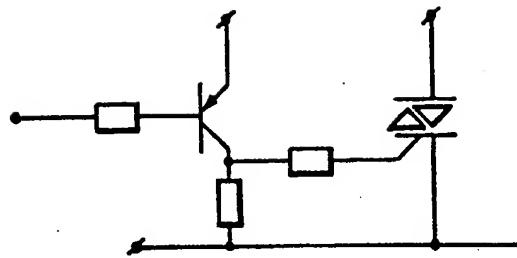


FIG. - 10

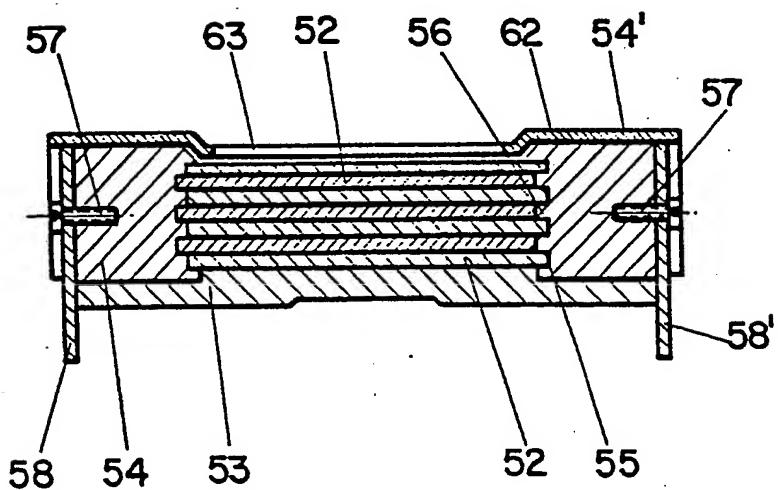


FIG. - 12

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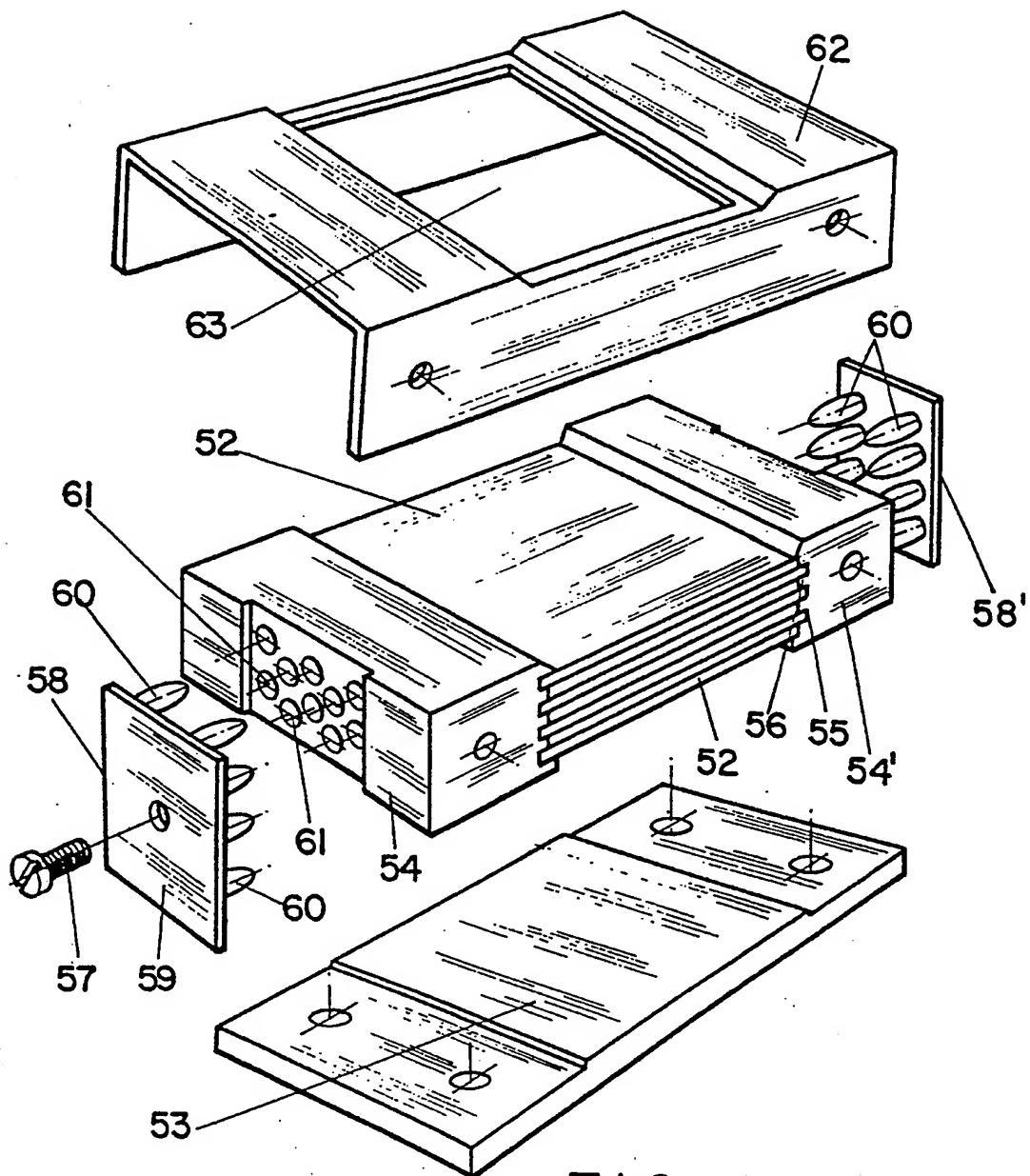


FIG. - 11